

Non-linear Generalizations of Algebraic Connectivity

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We generalize the notion of algebraic connectivity, the second smallest eigenvalue of the graph Laplacian matrix, by varying the norms in the Rayleigh-Ritz characterization. The so obtained parameters are shown to be well-defined and to be the least non-zero eigenvalues of the corresponding non-linear eigenvalue problem whenever the graph is connected. We provide combinatorial interpretations of several non-smooth cases.

This is joint work with Max Borba.